

# ABSTRACT

A fitness function circuit for computing a fitness value for a trial solution to a combinatorial problem accelerates the execution speed of a genetic algorithm machine by evaluating trial solutions at the rate of one evaluated solution per clock cycle. The circuit uses repeated tables of data which describe costs associated with each portion of each trial solution to find the total cost associated with each solution. By increasing memory used and repeating the data tables rather than accessing one table multiple times, and by adding each portion of each trial solution substantially simultaneously, the speed of one evaluated solution per one clock cycle is achieved.